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SPECIFICATION FOR TRIDEMORPH, TECHNICAL

UDC 632·951 TRIDEMORPH

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SPECIFICATION FOR
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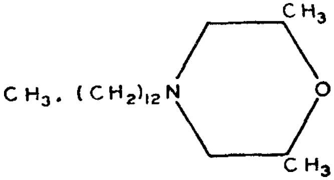
SPECIFICATION FOR TRIDEMORPH, TECHNICAL

0. FOREWORD

0.1 This **Indian Standard** was adopted by the Indian Standards Institution on 28 October 1980, after the draft finalized by the Pest Control Sectional Committee had been approved by the Agricultural and Food Products Division Council and the Chemical Division Council.

0.2 Tridemorph is a systemic fungicide with protective and curative action.

0.3 Tridemorph is the accepted common name by the International Organization for Standardization (ISO) for 2, 6-dimethyl-4-tridecyl-morpholine. The empirical and structural formulae and molecular mass of the compound are indicated below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_{19}H_{39}NO$		*297.5*

0.4 In the preparation of this standard due consideration has been given to the provisions of the Insecticides Act, 1968 and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for tridemorph, technical.

2. REQUIREMENTS

2.1 Description — The material shall be essentially 2, 6-dimethyl-4-tridecylmorpholine and shall be in the form of colourless to faint pale yellow liquid free from foreign matter.

2.2 The material shall also comply with the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR TRIDEMORPH, TECHNICAL

(*Clauses* 2.2 *and* 5.1)

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO	
			Appendix of this Standard	Cl No of IS : 6940-1973*
(1)	(2)	(3)	(4)	(5)
i)	Tridemorph content, percent by mass, *Min*	95.0	A	—
ii)	Moisture content, percent by mass, *Max*	2.0	—	4.2
iii)	Acidity (as H_2SO_4), percent by mass, *Max*	1.5	—	11.3

*Methods of tests for pesticides and their formulations.

3. PACKING AND MARKING

3.1 Packing — The material shall be packed as per requirements given in IS : 8190 (Part II)-1980*.

3.2 **Marking** — The containers shall bear legibly and indelibly the following information in addition to the information as is necessary under the Insecticides Act and Rules:

a) Name of the material;
b) Name of the manufacturer;
c) Date of manufacture;
d) Batch number;

---

*Requirements for packing of pesticides: Part II Liquid pesticides (*first revision*).

e) Net volume of contents;

f) Tridemorph content, percent (*m/m);* and

g) Minimum cautionary notice as worded in the Insecticides Act and Rules.

3.3 Each container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

4. SAMPLING

4.1 Representative samples of the material shall be drawn according to the method prescribed in 'Indian Standard methods for sampling of pesticides and their formulations' *(under preparation)*.

NOTE — Till such time the standard under preparation is published, the samples shall be drawn as agreed to between the parties concerned.

5. TESTS

5.1 Tests shall be carried out by appropriate methods referred to in col 4 and 5 of Table 1.

5.2 **Quality of Reagents** — Unless specified otherwise, pure chemicals and distilled water (see IS : 1070-1977*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

APPENDIX *A*

[*Table* **1, Item** (i)]

DETERMINATION OF TRIDEMORPH CONTENT

A-1. PRINCIPLE

A-1.1 Tridemorph is estimated by non-aqueous titration with perchloric acid.

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*Specification for water for general laboratory use *(second revision)*.

A-2. REAGENTS

A-2.1 Acetic Acid — glacial, anhydrous.

A-2.2 Acetic Anhydride

A-2.3 Crystal Violet Indicator — 0·5 percent (m/v) in acetic acid.

A-2.4 **Perchloric Acid** — Dilute 14·4 g of 70 percent perchloric acid with 24·5 g of acetic anhydride and made to one litre with glacial acetic acid. Extra acetic anhydride should be added if acetic acid used is not anhydrous.

A-3. PROCEDURE

A-3.1 Weigh accurately about 1 g of the sample and transfer this quantitatively to a 250-ml conical flask. Add 50 ml of glacial acetic acid and 10 ml acetic anhydride. Keep for about 5 minutes and titrate the contents against 0·1 N perchloric acid using crystal violet as indicator. Change from blue to green indicates the end point. Alternatively, the end-point may be determined potentiometrically.

A-3.2 Carry out a blank determination with 50 ml of glacial acetic acid using crystal violet as indicator.

A-3.3 **Calculation**

$$\text{Tridemorph content, percent by mass} = \frac{29.75 \times (V_1 - V_2) \times \mathcal{N}}{M}$$

where

V_1 = volume, in ml, of standard perchloric acid required for the sample;

V_2 = volume, in ml, of standard perchloric acid required for the blank;

$\mathcal{N}$ = normality of perchloric acid; and

M = mass, in g, of the sample.

A-4. STANDARDIZATION OF PERCHLORIC ACID

A-4.1 Weigh accurately about 0·2 g of potassium hydrogen phthalate and dissolve in 50 ml glacial acetic acid by warming for a short time. Titrate the solution with 0·1 N perchloric acid with two drops of crystal violet as indicator. Change in colour from blue to green indicates the end-point.

A-4.1.1 Carry out blank determination with 50 ml of glacial acetic acid and two drops of crystal violet indicator.

A-4.2 **Calculation**

$$\text{Normality} = \frac{4{\cdot}898 \times M}{V_1 - V_2}$$

where

M = mass, in g, of potassium hydrogen phthalate;

V_1 = volume, in ml, of the perchloric acid required for potassium hydrogen phthalate; and

V_2 = volume, in ml, of the perchloric acid required for blank.

(*Continued from page* 2)

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